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# FOLK MATERIA MEDICA.[1]

It has occurred to every one, doubtless, that in the mass of superstitious, empirical beliefs held among the ignorant concerning materials useful as medicines, some small portion of truth must be present. Of course, among these remedies we find some capable, as far as we can see, of producing beneficial results chiefly through the effect on the mind of the patient. We have bread pills and colored water still present as valued aids to the physician and also to the patient. Still, we cannot suppose that the action of all folk remedies can be thus explained. This supposition is borne out by the large number of animal and plant drugs that have come down to us from the remote past. Probably less that two dozen out of the number now in general use have been introduced during the century just closed. Since chemistry and the other experimental sciences now contributing to a better understanding of the properties of drugs have been in efficient service in this respect for less than one hundred years, it follows that the great bulk of the recognized remedies of plant and animal origin antedate the modern methods of investigation, and have come down to us from the folk medicine of former centuries recommended chiefly by their reputation for good works. Thus the line separating folk materia medica from that of the modern schools of medicine cannot be drawn, the latter growing out of the former as the tree-trunk grows from its roots.

When one casts about for a limit to what may be termed folk materia medica as distinguished from the materia medica of the schools, another relation soon becomes clear. As we trace the development of our present knowledge and practice in the matter of drugs back to its sources, we follow from the earliest times to the present a gradually ascending scale, marked by a decreasing emphasis on the grosser and more fanciful aspects, and we see a more intelligent and rational aspect more and more clearly defining itself.

Thus the beginnings of our present materia medica antedate the most ancient papyrus or inscription. It seems to have had its beginnings in Egypt, Phœnicia, and India. These strands were woven together by the Greeks, and collected by their restless and untiring travellers. We may trace the development down through the Romans and Arabians, each time and people contributing according to its special genius. Hippocrates and Dioscorides among the Greeks; Celsus, Galen, and Pliny from the Roman period; Avicenna, Mesue, and Rhazes among the Arabians — all were for centuries names of authority. The school of Salerno and the Benedictine monks of Monte Casino, hard by, for hundreds of years preserved the knowledge of the art of healing from becoming merest superstition.

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[1] A paper read before the Cambridge and Boston Branches of the American Folk-Lore Society.

Germany, under the patronage of Charlemagne, and Venice, from the vantage ground of her world-wide commerce, took the torch of learning from the failing hand of the Arabian and passed it over to Europe. Among the important later names follow Albertus Magnus at Ratisbon, Valerius Cordus, Gesner, Brunfels, Bock, and the other so-called Fathers of Botany. This group of German physicians and pharmacists rendered distinguished service.

A somewhat later figure, well known through Browning, was Paracelsus, who announced the doctrine of signatures. This dogma stated that every plant having useful medicinal properties bears somewhere about it the likeness of the organ or part of the body upon which it exerts a healing action. Traces of this doctrine may be seen in many of those popular plant names which impute medicinal properties to the species concerned. The hepatica, with its lobed leaf, was thought to be a sovereign remedy for liver complaints. The lungwort, the lichen, *Sticta pulmonaria,* resembling the reticulated surface of the lung, was long held to be a valuable remedy for lung troubles. This man had a very original mind and powerful personality, and left many other thoughts to influence later times. He held that illness and disease are matters concerning principally the spirit, and he maintained that drugs influence health only as they act through the organs of the body on the soul or spirit. He further imputed spiritual properties to drugs (or arcana, as he chose to call them), and held that the operation of the drug back of the physical machine is essentially an action of spirit on spirit. Accordingly, he studied how he might rid drugs as far as possible of their bodies, and obtain their essences or active principles separated from the crude substance of the herb or bark or root.

With the later names of Scheele, the chemist who discovered oxygen simultaneously with Priestly, Caspar Neumann of Berlin, Trommsdorf of Erfurt, Sertürner of Paris, Liebig, Wöhler, Berg, and, in our own generation, Flückiger, Hanbury, and Schmiedeberg, we come down to our own times. Only highly civilized lands, however, exhibit a development of medical knowledge represented by these later names. The more ignorant classes and peoples fall short according to the degree of their ignorance. In the extreme case of savages in many parts of the earth, we find a situation even more primitive than that represented by Egypt in the times of the Ebers papyrus. Thus, the same natural principle by which the life of any individual epitomizes the life history of the race, from its lowest stages of development to the highest, applies to the materia medica of the earth at this present time, illustrating, as it does, all the various stages of development through which has come down the knowledge possessed by the most enlightened moderns.

In what has been thus far said, I have tried to show that it is difficult to tell how far the use of drugs as now practised is a result of scientific activity and how far it is an inheritance from the folk remedies of former times. The former state grades into the latter. Since it is hardly useful to further prosecute our search for a well defined limit to our subject, we may waive the matter and define folk materia medica as that body of substances which in the popular belief possess efficacy as remedies, although no confirmation has been offered by men of science. In what follows I shall show that science has often merely put its official stamp on folk beliefs in producing our present materia medica, and raise the presumption that it will do so many times more. The bushel of chaff has already yielded much good grain, and may yield still more.

Since a reasonable time limit would exclude any exhaustive discussion of the subject, I have noted only a few of the more interesting and significant items of animal and plant materia medica.

It is possible from descriptions and pictures coming down from earlier centuries, as seen in the interesting works of Behrendes, Peters, and others, to form some idea of the stock kept by drug dealers of centuries ago. The most conspicuous features were dried reptiles, bundles of herbs or simples, packets of various animal substances, dried organs and excreta. The large part played in primitive materia medica by drugs of animal origin is very striking. In order to give an idea of the items of such a stock, I have transcribed some of the articles mentioned in lists of European origin dating back from one to two hundred years.

*Fats,* from elk, lamb, duck, wild duck, eel, goose, wild boar, bittern, dog, seal, goat, stork, beaver, wild-cat, lion, leopard, monkey, snake, he-bear, she-bear, etc.

*Marrow,* from bones of the lamb, donkey, goat, deer, horse, calf.

*Gall,* from the hawk, rabbit, pickerel, ox, bear.

*Liver,* of the eel, deer, wolf, otter, calf.

*Blood,* of the deer, dove, rabbit, hog, and calf.

*Lungs,* of the deer, bear, and fox.

*Teeth,* of the wild boar, beaver, hippopotamus, rabbit, wolf, trout.

*Excrement,* from various animals.

*Bones,* from various animals.

*Hair,* from cats, deer; ram's wool; partridge feathers.

Bees, toads, crabs, cuckoos, incinerated after drying.

Amber, spiders, lobster claws, horns of stag beetle, brains of sparrow and rabbit; shells of most various mollusks; corals.

Ants, lizards, leeches, earthworms, pearl, musk, honey, crabs' eyes, eyes from wolf and pickerel, ants' eggs, hens' eggs, ostrich eggs, cuttle-fish bone, dried serpents, hoofs, linen cloths steeped in blood.

An uncanny list we shall all agree! It may be interesting to mention a fact of which I have been informed by Professor Miyoshi, of the Imperial University of Japan, that in that country at the present time small lizards are taken in an entire and living condition for digestive troubles.

As materia medica developed in Europe, the tendency to make use of animal drugs began to decline. Ten years ago not more than fifteen found much recognition. The most important were ox gall, cod liver oil, pepsin, lard, tallow, and musk. Within the last decade, however, there has been a most marked revival in the use of animal drugs, and the market now offers a large number of extracts of animal organs. Let me quote a sentence or two from a well-known pharmaceutical journal of August, 1899: "Organic medication occupies an important position in the medical literature of the past year. The material adduced in its favor has gradually become so extensive that the reserve with which its doctrines were received has given way to a general recognition of their substantiality. It remains for the future, as a scientifically established fact, that the specific function of a pathologically changed or entirely suppressed human gland is capable of restitution by the introduction of a corresponding glandular substance of animals." (Pharm. Rev., Aug. 1899, p. 336.)

I will mention some of the best proved remedies derived from animal organs and cite some of the troubles for which they are useful.

The cerebrum of different animals, dried or fresh, is a very efficient remedy for lockjaw (tetanus) and for certain classes of nervous troubles. It is capable of rendering harmless the alkaloid *strychnine*, a conspicuous nerve stimulant, and morphine, an alkaloid equally marked as a sedative. The *thyroid gland* acts favorably on the circulation in a number of troubles: helps cases of goître, and so influences the nutrition as to reduce obesity. The *pituitary gland* increases the rate of the heart beat and raises the blood pressure. It is used when this structure in the brain does not function properly. The *spleen*, dried and pulverized, is useful in certain mental troubles characterized by stupor and general weakness. Extracts prepared from the *ciliary body* and *vitreous body* of the eye are used in a number of optical difficulties.

From the examples cited and from others not given it appears probable that all the organs of the body, as obtained from the common animals, when properly prepared and administered, are of marked effectiveness in disease, and act, in general, according to the old popular notion that an organ from an animal, used as a remedy, strengthens the corresponding organ of the patient. Thus a large class of the folk remedies just cited seem to receive a sufficient vindication at the bar of twentieth century science. In this particularly unpromising bushel of chaff there has been found a large measure of grain.

A number of other classes of animal remedies remain. Let us consider those consisting of the blood of various animals. In a recent summary on the subject at least fifteen preparations of blood are mentioned as now on the market. They are prescribed for patients suffering from deficient blood supply and from poor assimilation. *Arterial blood* dried and powdered is sometimes used as a restorative, in continuation of ancient usage.

Many folk remedies for skin troubles involve the external application of the blood of various animals. An interesting collection of such uses may be seen in Mrs. Bergen's "Animal and Plant Lore."

In Maine, blood from a cat, especially a black cat, is recommended as a cure for "shingles." Over a wide area of Eastern United States the freshly removed skin is preferred. In Cape Breton, black cat's blood is said to be good for ringworm. Hives are believed to be cured in Eastern Massachusetts by the fresh skin of a black cat. Sometimes a fowl is used instead of a cat.

As a result of very careful work by investigators, chiefly European, it has been shown that animals are protected from pathogenic germs which may enter the blood, by a class of antiseptic substances generated or localized in the blood. Here these germicidal principles meet and usually destroy the invaders. The nature of these substances is not well known. That the blood of one animal may be poisonous to one of another kind has been well authenticated. Thus eel's blood has somewhat recently been shown to contain a substance classed among the toxalbumins, which is fatally poisonous to rabbits when injected hypodermically in small quantities. The resulting symptoms strongly suggest those following the introduction of snake poison.

Since some of the skin troubles above mentioned in connection with blood cures are known to be due to the presence in the skin of small vegetable parasites, perhaps bacterial or fungal in their nature, the suppression of the trouble by the use of fresh blood can perhaps be accounted for by the action on the germs of the antiseptic principles contained in it. I shall not try to explain why the cat should be black. The use of blood in curing some kinds of sore mouth, as recommended in Newfoundland, may perhaps be accounted for in a similar way.

The study of the action of blood has shown a further point. Eel's blood, when properly prepared and administered, is able to render animals immune from harm when later inoculated with snake venom. This brings up an interesting point in connection with the use of blood or of flesh of *newly killed* animals in treating snake bites. I notice in Mrs. Bergen's valuable collection the statement that in Illinois, Michigan, and Missouri the flesh of a freshly killed chicken is regarded as capable of effecting a cure.

Bones as curative agents date back to the earliest times, and are still sometimes cited in books on materia medica. The bones of domestic animals and cuttlefish bones similarly used are given as a remedy for an acid condition of the stomach. In the remedial process, the acid combines with the carbonates of the bones. Egg-shells, the pearly portions of the shells of most mollusks and corals, noted in the ancient apothecary stock, are likewise useful as antacids.

The uses of fats, whether from marrow of bones or from other parts, are many and have always been conceded to be valuable.

To inquire in detail into all animal drugs known to folk materia medica would take us too far, but it has been shown, I hope, that a large number of these folk beliefs really rest on a basis of fact which we are coming more fully to appreciate. Nevertheless, I am not sanguine enough to look for any rational explanation of the use of hoofs, or of teeth, or of incinerated cuckoos.

Let us now turn our attention to a consideration of some points concerning remedies of vegetable origin. Plants have always supplied a large proportion of the medical substances used by all peoples at all times. At the present time, this proportion is perhaps less than ever in the past. This is due to the great development of organic chemistry. It has been found in the laboratory to what active principles plants owe their medical value, and what is the molecular nature of these active principles.

The growing ability of the chemist to build up, synthetically, molecules having a desired molecular structure has rendered it possible to make in the laboratory a large number of substances having valuable medicinal qualities. It has even become possible, within a now limited but ever widening range, to indicate from the structure of the molecule its physiological action. Thus, as chemistry has increased in efficiency in this direction, plant remedies have more and more become relegated to the list of herbs and simples. There is no immediate danger, however, that plant remedies are to be altogether superseded by the products of the laboratory.

As we go back to the earliest known sources in the history of materia medica, we find prominent in the list of plants used as remedies by the people many of those to-day recognized as *standard remedies.* Inscriptions on temple walls in Egypt, dated about 1700 B. C., state that sea voyages to parts of Africa and Arabia were made in order to get gum-arabic, frankincense, and myrrh. Probably at an equally early date mastic, cardamoms, curcuma, and fenugreek were used in Egypt, and coriander, the poppy, and the castor-oil plant were under cultivation. The Hebrews and Phœnicians doubtless knew all these products and many more; since aloes, cinnamon, saffron, olive-oil, pepper, and others are added to the list, on Old Testament authority.

At a very ancient date camphor seems to have been a very well-known medicine among the Chinese, and menthol among the Japanese.

During the centuries of Greek and Roman predominance, the list was much increased by substances brought from the Orient and other sources. Almonds, squills, pomegranate bark, anise, fennel, nutgall, savin tops, opium, licorice, scammony, tragacanth, male fern, turpentine, and many other drugs were brought into use. As these nations declined, the Arabians assumed the leadership in affairs of learning, and in their turn enriched the world's stock of remedial plant substances. Tamarinds, nux vomica seeds (source of strychnine), cubebs, senna leaves, and rhubarb were among the number.

Centuries passed, and, as new lands were explored and the medical traditions of new peoples were learned, additional drugs were brought into use. The discovery of the American continent, embracing all latitudes and conditions, and occupied by a rich and varied flora, offered a new opportunity for hunters of drugs and spices. The discovery of the sassafras, with its spicy taste and fragrance, won for its discoverer more immediate honor than was bestowed on Columbus. The cinchona barks, ipecacuanha root, and sarsaparilla were among the important drugs.

During the last twenty years the leaves of *Erythroxylon coca* (the source of cocaine), pilocarpus, and jaborandi, and the seeds of strophanthus, have taken their place among recognized remedies. Such has been, in barest outline, the growth of the knowledge and use of plant drugs.

But the question may be asked, How this is related to folk materia medica? The relation is the most intimate, as I hope presently to indicate. Every people has its own trusted remedies, usually found, in large part, among the plants immediately about them. The value of these has been tested and handed down from generation to generation as a precious possession. Certain members of the tribe or village, more or less singled out by their skill in healing, or by their keen discrimination in identifying the useful herbs, preserved this information, this medical folk-lore. As commercial, scientific, or religious incentives led more enlightened individuals to go among these races, the medical properties of their plants became matters of great interest, and, in some cases, of eventually world-wide significance. An instance will suffice to illustrate the process. In the seventeenth century the wife of the governor of one of the Spanish colonies west of the Andes was attacked by malarial fever, and seemed likely to die. The natives gave to a Jesuit missionary, who worked among them, bark from a certain kind of small tree growing on the slopes of the Andes, and told him to grind it up, and give it to the countess at regular intervals. The directions for use and the bark were duly transmitted and tested. The countess recovered and, being of a philanthropic disposition, obtained a quantity of the powdered bark and sent it to Europe for use among the poor. It was known for a long time as the "Countess bark," and by its good effects attracted much attention at Madrid. In due time the plants were botanically investigated and named in honor of the house to which the countess belonged, "Chinchona." This became abbreviated to "Cinchona," the generic name usually applied to these trees. In course of time the active principle was discovered by the chemists and named "*quinine.*"

*Jaborandi leaves*, collected in the Amazon valley, useful in dropsy, uræmia, and various other troubles, first attracted the attention of the explorers by their use in the hands of the natives as a remedy for snake bite. In fact, the native name of the drug, of which *jaborandi* is a corruption, is *jaguarandi*, a word indicating in the native dialect this useful property. The most conspicuous action of the drug is seen in the greatly increased action of the sweat glands, a feature immediately suggesting its usefulness in dropsy and snake bite.

*Coca leaves*, borne by a shrubby plant of the Bolivian Andes, were cultivated by the natives prior to the Spanish invasion. The leaves are chewed by the natives for their peculiar physiological action. The sense of fatigue on long journeys or during hard labor is lessened and a sense of well-being imparted. This fact attracted the attention of Europeans, and the discovery of *cocaine* resulted. This drug has done much to rob minor surgical operations of their terror by numbing the endings of sensory nerves.

As we look over the history of the long list of vegetable drugs now in use, we see that a previous recognition of unusual properties by the people to whom they were known as medical agents, in very many cases attracted the attention of students of medicine, and led to their introduction into scientific medicine. The form taken by this recognition of unusual properties varied widely. Strophanthus, a remedy now widely used for certain heart troubles, was first brought to the attention of explorers of equatorial Africa as a very deadly arrow poison, so deadly as to paralyze the heart when but slightest wounds were made by the arrows. Aconite root, supplying the well-known remedy of the same name, furnishes arrow poison for Malay tribes of southeastern Asia and certain Pacific islands.

The calabar bean, *Physostigma*, first attracted the attention of explorers of the Niger valley through its use in ordeals. Only those plants were allowed to grow which were cultivated by the chief of the village for judicial purposes. A person accused of grave crime was brought before the chief and sentenced to eat the seeds of this plant until either vomiting or death ensued. If death resulted, guilt was regarded as certain. This deadly seed was brought to Europe and tested in the light of its function in the Niger valley. As a result a new and valuable remedy for certain exaggerated nervous conditions was discovered.

The use of substances in connection with native religious services has led to the discovery of new remedies. Some of the tribes of Indian Territory observe a religious occasion of which the chief feature is the chewing of the so-called "mescal buttons," dried slices of small cacti belonging to the genus *Anhalonium.* These dried slices are chewed until a state of great exhilaration is reached not unlike that following the use of *hasheesh.* The exhilaration is followed by a period of depression and sleep. These rites came to the attention of students of materia medica, and the mescal buttons were investigated. Hospital tests showed that the alkaloidal principle contained in the cactus furnishes a valuable remedy for certain troubles of the nervous system.

In some cases the hard conditions occasioned by war have forced a people to a study of the resources of their folk materia medica. In Revolutionary days, when the accustomed supply of remedies from the mother country failed, the colonists turned to the native plants in the hope of substitutes. The general use of the bark of the butternut as a purgative is said to date from that time.

The history of *Lobelia inflata*, the Indian tobacco, formerly much used in regular practice as an emetic and anti-asthmatic, was an unusually stormy one. Oldest reports indicate that it was used by Penobscot Indians and white colonists in domestic medicine as early as 1770. In 1785 that all-around genius, Rev. Manasseh Cutler, described its emetic properties in his accounts of "Indigenous Vegetables." Thompson, the founder of the school bearing his name, claimed to have first used lobelia, and waged war on Cutler, as well as on many others. By dint of much litigation, by the death of a number of patients from the effects of lobelia given by Thompson, and by the reported death of many more from the same cause, lobelia was widely advertised. Thus in the early decades of our national history, the name "lobelia" was the slogan in the medical profession whereby a Thompsonian was identified. It would carry us too far to cite further instances in this direction.

In what I have said, I hope that one thing may have been made clear. The folk materia medica of any time or land need not altogether be despised when looked at from the practical standpoint. As slang phrases and barbarisms introduce candidates for membership into philological polite society, so the medical lore of the people does contain, and has always contained, elements capable of adaptation and use in skilled hands. It is the crude stuff in which much of value lies hidden. For the student of folk-lore, quite apart from utilitarian considerations, it is in itself a sufficient reason for study.

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